HIGH POWER ELECTRONIC CO., LTD

Part Name: 91.75032.U01

Model No: HPC-750-B14S

Document Version:01

PRODUCT SPECIFICATION

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Approved by :	**Checked by :**	**Prepared by :**

HIGH POWER ELECTRONIC CO., LTD
TEL: + 886-2-2659.2535
Fax : +886-2-2659.2265

SIRFA International Co., Ltd.
TEL: +86-769-87720745
Fax :+86-769-87915210

Subject:Change History of Specification

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Table of Contents

1 **General**
- 1.1 Scope

2 Input Characteristics
- 2.1 Input Voltage
- 2.2 Input Frequency
- 2.3 Max. Input AC Current
- 2.4 Inrush Current
- 2.5 Efficiency

3 Output characteristics
- 3.1 Nominal Operation Output
- 3.2 Remote On/Off controlled mode
- 3.3 Regulation
- 3.4 Rise Time
- 3.5 Hold-up Time
- 3.6 5 VSB
- 3.7 PG-OK
- 3.8 3.3V Sense
- 3.9 Capacitive Load

4 Protection
- 4.1 Input Protection
- 4.2 Output Protection

5 Start Stability
- 5.1 No Load Start
- 5.2 Cold Start

6 Environments
- 6.1 Temperature and Humidity
- 6.2 Altitude
- 6.3 Vibration and Shock

7 Conducted EMI

8 Product Safety
- 8.1 Safety Requirement
- 8.2 Leakage Current
- 8.3 Insulation Resistance
- 8.4 Dielectric Voltage Withstand

9 Power Good Signal

10 MTBF

11 Burn-In
- 11.1 Input Voltage
- 11.2 Test Condition

12 Harmonics

13 Power Factor

14 Mechanical Specification
- 14.1 Outline Dimension
- 14.2 Weight
- 14.3 Pin Assignment

1. General

1.1 Scope

This specification defines the performance characteristics of a single phase 750 watts, 6 output power supply. This specification also defines worldwide safety and electromagnetic compatibility requirements for the power supply which is intended for use in computer products.

2. Input Characteristics

2.1 Input Voltage

Nominal Voltage	Voltage Variation Range
100- 240 Vrms	90 - 264 Vrms

2.2 Input Frequency

Nominal Frequency	Frequency Variation Range
50-60 Hz	47 Hz to 63 Hz

* The power supply must operate at above frequency with 90-264 VACrms input voltage range.

2.3 Max. Input AC Current

Max. Input Current	Measuring Range
10A	90 - 264 Vrms

2.4 Inrush Current

The power supply must meet inrush requirements for any rated AC voltage, during turn on at any phase of AC voltage, during a single cycle AC dropout condition, during repetitive ON/OFF cycling of AC, and over the specified temperature range. The peak inrush current shall be less than the ratings of its critical components (including input fuse, bulk rectifiers, and surge limiting device).

2.5 Efficiency

HPC-750-B14S provides an efficiency of **82%** minimum when measured at full load under 115V/60Hz and 230V/50Hz condition.

3. Output characteristics

3.1 Normal Operation Output

Output Voltage	Load MIN	Range MAX	Regulation	Ripple P-P Max.	Ripple & Noise P-P Max.
1. +5V	0.2A	22.0A	±5%	70mV	100mV
2. +12V	0.6A	54.0A	±5%	120mV	200mV
3. –12V	0.0A	0.3A	±10%	150mV	200mV
4. +5Vs	0.0A	3.0A	±5%	70mV	100mV
5. +3.3V	0.1A	22.0A	±5%	70mV	100mV

- *Maximum continuous total DC output power should not exceed 750W.*
- *Maximum continuous combined load on +3.3VDC and +5VDC outputs shall not exceed 130W.*
- *Maximum combined load on 12V outputs shall not exceed 648W.*

NOTE:

Noise test should be measured with 20 MHz bandwidth frequency oscilloscope. The output terminal shall add a tantalum capacitor of 10uF in parallel with a ceramic capacitor of 0.1uF.

3.2 Remote On/Off Controlled mode

The PSON# signal is required to remotely turn on/off the power supply, PSON# is an active low signal that turns on the output power rails. When this is not pulled low by the system, or left open, the outputs (except the +5VSB) turn off. This signal is pulled to a standby voltage by a pull-up resistor internal to the power supply.

TTL level "H" 2.0 V - 5.25 V
"L" 0.0 V – 1.0 V

3.3 Regulation

The cross regulation defined as follows, the output regulation should be within the specified range.

Load	+5V	+3.3V	+12V	-12V	+5Vsb
Light Load.	2.95A	2.95A	10.16A	0.06A	0.56A
Typical Load	7.37A	7.37A	25.42A	0.14A	1.41A
Full Load	14.75A	14.75A	50.84A	0.28 A	2.82A

3.4 Rise Time

DC output rise time is less than 20 mS at nominal line and full load.

3.5 Hold-up Time

DC +5V output maintains at least 12mS after power off which hold within para 3.1 under 115V/60Hz and 230V/50Hz condition.

3.6 5VSB

5VSB is requierd for the implementation of PS-ON described above. 5VSB is a standby voltage that may be used to power circuits that require power input during the powered-down state of all power rails. The 5 VSB pin should deliver 5V ± 5% at a minimum of 3.0 A for PC board circuits to operate. Conversely, PC board should draw no more than 3.0A maximum form this pin. This power may be used to operate circuits such as soft power control.

3.7 PG-OK

PG-OK is a power good signal and should be asserted high by power supply to indicate that the +5 VDC and +3.3 VDC outputs are above the under-voltage thresholds of the power supply. When this signal is asserted high, there should be sufficient mains energy stored by the converter to guarantee continuous power operation within specification. Conversely, when either the +5VDC or the +3.3VDC output voltage falls below the under-voltage threshold, or when mains power has been removed for a time sufficiently long so that power supply operation is no longer guaranteed, PG-OK should be deasserted to a low state. See Figure 1 for a representation of the timing characteristics of the PG-OK,PS-ON, and germane power rail signals.

3.8 3.3V Sense

A default 3.3V sense line should be implemented pin 13 of the connector.

3.9 Capacitive Load

The power supply should be able to power up and operate normally with the following capacitances simultaneously present on the DC outputs.

Output	Capacitive load (uF)
+5V	6,000
+12V1	5,000
+12V2	3,000
+3.3V	6,000
-12V	350
+5VS	350

4. Protection

4.1 Input Protection

In primary circuit of the power supply , a protected fuse is inserted. Only internal fault of the power supply will cause the fuse blown. Any overload or short circuit at DC output will keep from fuse brown or fire hazard

4.2 Output Protection

4.2.1 Under voltage protection

The +5V/+12V/+3.3V DC output are protected against the under voltage condition . range value can't be exceed 3.3~3.7V at 5V terminal and 8.5~9.5V at 12V, 2.0~2.4V at 3.3V.

4.2.2 Over Voltage Protection

The +5V/+12V/+3.3V DC output are protected against the over voltage condition . Maximum value can't be over 6.5V at 5V terminal and 15.5V at 12V, 4.3V at 3.3V.

4.2.3 Over Power Protection

The power supply can be used electronic circuit to limit the output current against exceeding 60% of surge output power or protected against excessive power delivery since short circuit of any output or over total power at high line.

4.2.4 Short Circuit Protection

Short circuit placed on +5V,+12V,+3.3V,-12V will latch off. +5VSB will auto-recovery.

4.2.5 Over-Current Protection

Current protection should be designed to limit the current to operate within safe operating conditions.Over current protection schemes where only the voltage output that experiences the over current event is shut off may be adequate to maintain safe operation of the power supply and the system; however, damage to the motherboard or other system components may occur. The recommended over current protection scheme is for the power supply to latch into the shutdown state. The setting of over current protection for each output rail is as following

4.2.6 Over-Temperature Protection

This power supply includes an over-temperature protection sensor, which can trip and shut down the power supply at 110℃

5. Start Stability

5.1 No Load Start

When power is applied to HPC-750-B14S with no load connected or under minimum load connected, neither damage to power supply nor hazards to users will occur.

5.2 Cold Start

The power supply shall operate properly when first applied at normal input voltage and or so maximum load after 4 hours storage in 0℃ environment.

6. Environments

6.1 Temperature and Humidity

6.1.1 Operating

Temperature	0 to 45 ^{O}C (See Figure 2)
Relative Humidity	20 to 90 %

6.1.2 Storage

Temperature	-40 to 70 ^{O}C
Relative Humidity	20 to 95 % noncondensing

6.2 Altitude

The power supply can operate normally at any altitude between 0 to 10000 feet.

6.3 Vibration and Shock

Sweep and resonance search for each of X,Y,Z, axis at the sweep.

RATE of 1/OCTAVE/Min.

Frequency	Duration	Amplitude
5-55-10 Hz	30 minutes	0.35 mm

7. Conducted EMI

8. Product Safety

8.1 Safety Requirement

TUV,CB

8.2 Leakage Current

The AC leakage current is less than 3.5mA when the power supply connect to 264Vac/50Hz .

8.3 Insulation Resistance

The insulation resistance should be not less than 30M ohm after applying of 500VDC for 1 minute.

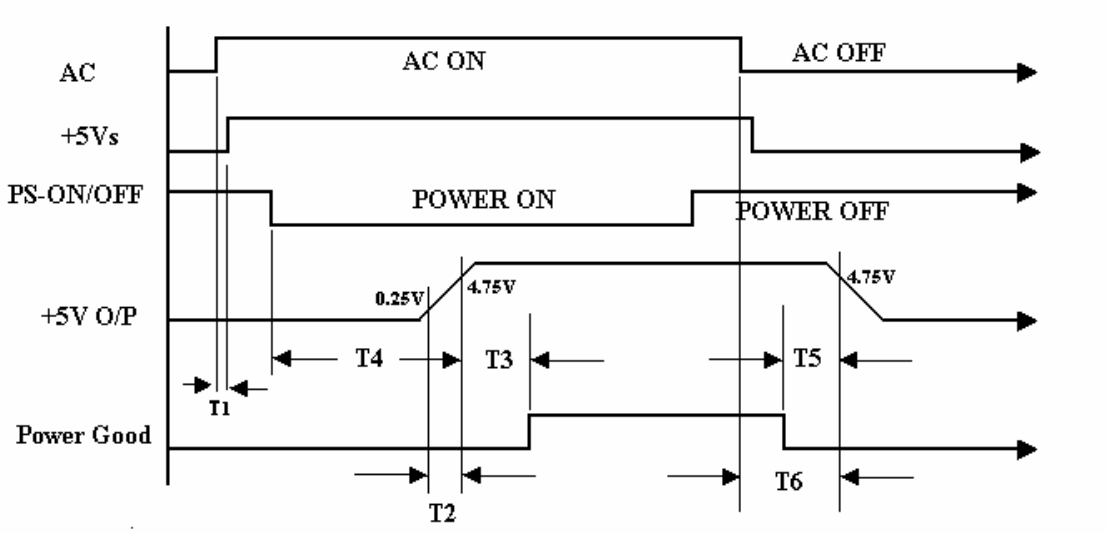
8.4 Dielectric Voltage Withstand

The power supply shall withstand for 1 minute without breakdown the application of a 60Hz 1500V AC voltage applied between both input line and chassis (20mA DC cut-off current). Main transformer shall similarly withstand 3000Vac applied between both primary and secondary windings for a minimum of one minute.

9. Power Good Signal

A TTL compatible signal for the purpose of initiating an orderly start-up procedure under normal input operating conditions. During power up, this signal is asserted (low) until +5V is under regulation and AC reaches min. line specification range. After all voltage are going appropriate level, the system may have a turn on delay of 100mS, but no greater than 500mS. During power off the signal should go to low level before +5V is out of regulation. The low level is 0 to 0.8V and high level is 4.75 to 5.25V. The " Power Good "signal can drive up to 6 standard TTL loads.

Time Diagram Figure 1



* T1 : Turn on time (2 sec. Max.)

* T2 : Rise time (≦ 20mS Max.)

* T3 : Power good turn on delay time (100 < T3 < 500 mS)

* T4 : Switch on time (0.5 sec. Max.)

* T5 : Power good turn off delay time (1.0 mS Min.) PS-ON/OFF

* T6 : Power hold-on time (12 mS Min.)

* Power on-off cycle :

When the power supply is turned off for a minimum of 2.0 sec. and turn on again, the power good signal will be asserted.

10. MTBF

The MTBF of the power should be 100,000 hours min.

11. Burn-In

11.1 Input Voltage

Applying 220Vac for 230V model.

11.2Test Condition

Applying 75% loads for the power supply in 45 (+/-5) ^{O}C chamber for 4 hours.

12.Harmonics

The product shall meet requirement for EN61000-3-2 & EN61000-3-3 :1995 standard of class D, test at 230Vac 50Hz.

13.Power Factor

The power supply with active power factor correction, and meet the EN61000-3-2 standards, The power factor is greater than 0.9 at 230V/50Hz, Max. load.

14.Mechanical Specification

14.1Outline Dimension

Please refer the mechanical drawing of HPC-750-B14S

14.2 Weight

Maximum weight is 1.7 Kgs.

14.3 Pin Designation :

14.3.1DC CONNECTOR REQUIREMENTS

List or recognized component appliance wiring material(AVLV2)，CN，rated min 85^{0}C ，300VAC shall be used for all output wiring.

14.3.2 BASEBOARD CONNECTOR

PA1(20P) RA Connector：MOLEX 39-01-2200 or Approved Equivalent

18 AWG Wire	Signal	Pin	Pin	Signal	18 AWG Wire
Orange	+3.3 VDC	13	1	+3.3 VDC	Orange
Brown (22AWG)	+3.3V (SENSE)				
Blue	-12 VDC	14	2	+3.3 VDC	Orange
Black	COM	15	3	COM	Black
Green (20AWG)	PS-ON	16	4	+5 VDC	Red
Black	COM	17	5	COM	Black
Black	COM	18	6	+5 VDC	Red
Black	COM	19	7	COM	Black
		20	8	PWR_OK	Gray (20 AWG)
Red	+5 VDC	21	9	+5VSB	Purple(16AWG)
Red	+5 VDC	22	10	+12 V DC	Yellow

PA2(4P)

Red	+5 VDC	23	11	+12 V DC	Yellow
Black	COM	24	12	+3.3 VDC	Orange

14.3.3 Peripheral Connectors

PH

Connector : AMP 1-480424-0 or MOLEX 8981-04P or approved equivalent

PH1

Connector : AMP 171822-4 or approved equivalent

Contacts : AMP 61314-1 terminals or equivalent

Pin	Signal	20 AWG Wire	Pin	Signal	22 AWG Wire
1	+12 V DC	Yellow	1	+5 VDC	Red
2	COM	Black	2	COM	Black
3	COM	Black	3	COM	Black
4	+5 VDC	Red	4	+12 V DC	Yellow

14.3.4 Serial ATA Power Connector

PF/PG

Connector : MOLEX 88751 or equivalent

Pin	Signal	18 AWG Wire
1	+3.3VDC	Orange
2	COM	Black
3	+5 VDC	Red
4	COM	Black
5	+12VDC	Yellow

14.3.7 PCI Power Connector

PD/PD1/PE/PE1
Connector : MOLEX 88751 or equivalent

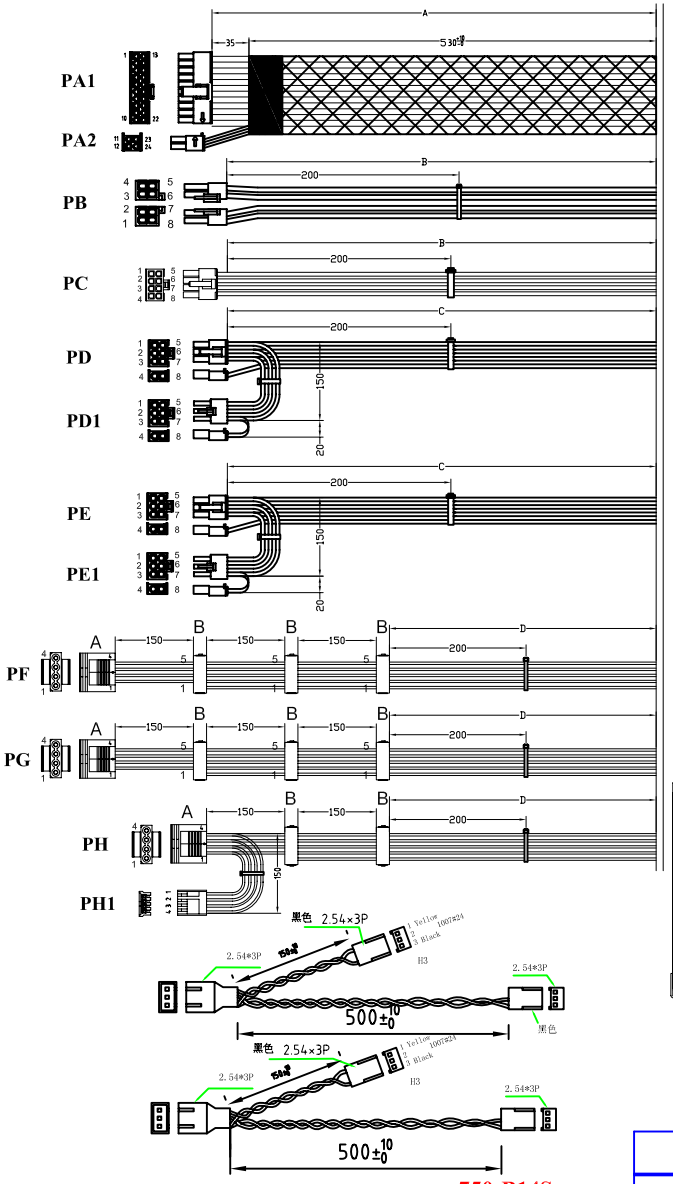
Pin	Signal	18 AWG Wire
1	+12V DC	Yellow
2	+12V DC	Yellow
3	+12V DC	Yellow
4	COM	Black
5	COM	Black
6	COM	Black
7	COM	Black
8	COM	Black

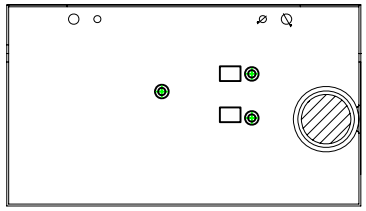
14.3.8 +12V Power Connector

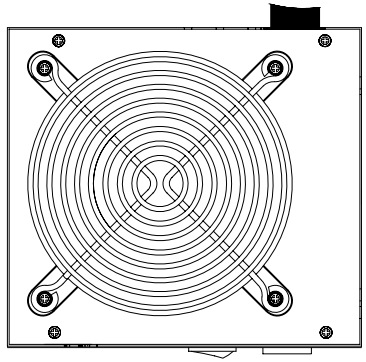
PB/PC Connector : Molex 39-01-2040 or equivalent

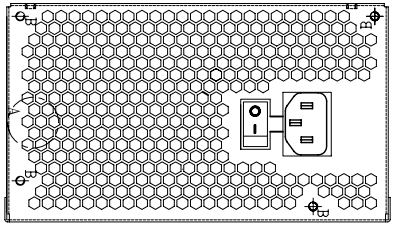
Pin	Signal	18 AWG Wire
1	COM	Black
2	COM	Black
3	COM	Black
4	COM	Black
5	+12 V DC	Yellow
6	+12 V DC	Yellow
7	+12 V DC	Yellow
8	+12 V DC	Yellow

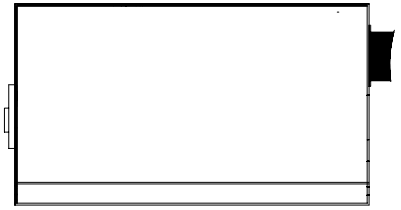
DIM.
PA1: 500+30MM -0MM
PA2: 505+30MM -0MM
PB: 600+30MM -0MM
PC: 600+30MM -0MM
PC: 450+30MM -0MM
PD: 450+30MM -0MM
PD1: 150+30MM -0MM
PE: 450+30MM -0MM
PE1: 450+30MM -0MM
PF: 450+30MM -0MM
PG: 450+30MM -0MM
PH: 450+30MM -0MM
PH1: 150+30MM -0MM











REF.ID.	PIN NO.	COLOR	V
PA1 / PA2	1	ORANGE	+3.3V
	2	ORANGE	+3.3V
	3	BLACK	COM
	4	RED	+5V
	5	BLACK	COM
	6	RED	+5V
	7	BLACK	COM
	8	GRAY	PWR_OK
	9	PURPLE	+5VSB
	10	YELLOW	+12V
	13	ORANGE	+3.3V
		BROWN	+3.3V (SENSE)
	14	BLUE	-12V
	15	BLACK	COM
	16	GREEN	PS_ON#
	17	BLACK	COM
	18	BLACK	COM
	19	BLACK	COM
	20		
	21	RED	+5V
	22	RED	+5V
	11	YELLOW	+12V
	12	ORANGE	+3.3V
	23	RED	+5V
	24	BLACK	COM

REF.ID.	PIN NO.	COLOR	V
SATA / PF / PG	1	ORANGE	+3.3V
	2	BLACK	COM
	3	RED	+5V
	4	BLACK	COM
	5	YELLOW	+12V
4P PH	1	YELLOW	+12V
	2	BLACK	COM
	3	BLACK	COM
	4	RED	+5V
4p PH1	1	RED	+5V
	2	BLACK	COM
	3	BLACK	COM
	4	YELLOW	+12V
CPU / PB / PC	1	BLACK	COM
	2	BLACK	COM
	3	BLACK	COM
	4	BLACK	COM
	5	YELLOW	+12V
	6	YELLOW	+12V
	7	YELLOW	+12V
	8	YELLOW	+12V
PCI / PD / PD1 / PE / PE1	1	YELLOW	+12V
	2	YELLOW	+12V
	3	YELLOW	+12V
	4	BLACK	COM
	5	BLACK	COM
	6	BLACK	COM
	7	BLACK	COM
	8	BLACK	COM

SHEET METAL TOLERANCE (UNLESS OTHERWISE SPECIFIED)			
DIMENSION	PIERCING	BENDING	ANGULAR
x < 8	±0.1	±0.15	±0.3°
8 < x < 25	±0.1	±0.2	±0.5°
25 < x < 100	±0.15	±0.25	±0.5°
100 < x < 300	±0.2	±0.3	±0.1°
300 < x < 800	±0.3	±0.5	±1.5°

QTY REQD	PSCM NO	IDENTIFYING NO	PART OR DESCRIPTION	MATERIAL OR NOMENCLATURE SPECIFICATION
PARTS LIST				

APPROVED	CHECKED	DESIGNED
研發部 2011.03.11 鍾海明	DATE:	魯秋燕 DATE: 2011.03.05

UNIT:mm | M | A4

TITLE: HIGH POWER
HIGH POWER ELECTRONIC CO., LTD.

SIZE	REV: 01	PRT NO.	01.02750.025
SCALE	1:1	DWG NO.	

標識	修改日期	修改內容	版本	NO	尺寸	蜂巢（Pcs）	彩盒（PCS）
				外箱			
				下棧板			
				上棧板			

MODEL NAME	91.75032.U01

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